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In the eye of the beholder: Subjective inequality measures and individuals' assessment of market justice

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Abstract: This study presents a simple empirical framework suitable for describing individuals' subjective evaluations of wage inequality and their normative assessment of market justice. The framework is illustrated using survey data from the International Social Survey Program from Switzerland. Although most individuals accept the fact that there are quite large pay differentials across different occupations, they would still prefer a more equal distribution of market wages. The empirical analysis further shows that financial self-interest, normative beliefs, and perceptions of how wages are determined all have an impact on the assessment of market justice. Finally, subjective inequality measures and the assessment of market justice turn out to be substantive predictors of individuals' general support for the welfare state and their party identification.

JEL classifications: D3; D63; H1

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1. Introduction

Redistribution is one of the primary objectives of the modern welfare state. Consequently, it is no surprise that all OECD countries spend large amounts of resources on redistribution (OECD, 2008). Redistributive interventions by the state are usually justified on the grounds that they provide income maintenance or insurance in the case of adverse shocks or that they redistribute income across the lifecycle (Barr, 1992). However, redistributive interventions may also aim at redistributing from rich to poor with the explicit goal of reducing existing inequalities. Especially for the latter reason, individuals' voting behavior and their preferences with respect to redistribution are usually thought to determine the overall amount of redistribution and the reduction of existing inequalities (Borck, 2007).[1] Reflecting this key conceptual issue, this paper presents new empirical evidence on the hypothesized link between preferences with respect to redistribution and political outcomes, studying the empirical association between individuals' normative assessment of market justice on the one hand and their general support for redistribution by the state as well as their preferences over different political parties on the other.

A series of empirical studies focuses on individuals' preferences over redistribution and the underlying determinants of the demand for redistribution. For example, Fong (2001) uses survey data from the U.S. to model support for redistribution as a function of individuals' subjective beliefs about the determinants of pay. She finds that individuals' beliefs about the determinants of pay have large and significant effects on the demand for redistribution, even after controlling for variables describing self-interested motives for redistribution, the most important of which are captured by an individual's level of personal income. Even though personal income does explain some of the variation in support for redistribution, it is a surprisingly poor predictor on its own, given its prominent role within the economic literature (e.g. Meltzer and Richard, 1981; Roberts, 1977).[2] Similarly, Corneo and Grüner (2002) find that selfish motives drive the support for redistribution, but not exclusively so. People appear

[1] Several researchers have argued that observed cross-country differences in the actual amount of redistribution are presumably linked to corresponding differences in perceptions and beliefs (e.g. Alesina and Angeletos, 2005; Bénabou and Tirole, 2006). Empirical studies have primarily focused on the simple contrast between Europe and the U.S. (e.g. Alesina and Glaeser, 2004), the large heterogeneity in perceptions and beliefs among European countries notwithstanding (Osberg and Smeeding, 2006).

[2] Harms and Zink (2003) review different mechanisms that may explain the limited influence of individual income on redistributive preferences.

to share a common belief in distributive justice, and they find that individuals' attitudes toward, and their perceptions of, distributive issues are at least as relevant as personal income in shaping preferences for redistribution. Similar results on the importance of ideological factors are presented in Alesina and La Ferrara (2005) as well as in Bernasconi (2006), who studies people's satisfaction with the tax system instead of general redistributive preferences. Another important explanation of differences in preferences over redistribution stresses the role of past and expected future social mobility, as argued by Piketty (1995) and Bénabou and Ok (2001). A recent study by Giuliano and Spilimbergo (2009) underlines the important role individual experiences of economic hardship play in shaping individuals' normative beliefs. Moreover, all these studies also show differences in preferences over redistribution across various socio-demographic characteristics like education, ethnicity, and gender.[3]

This study adds to the existing literature on the determinants of preferences with respect to redistribution on two distinct dimensions. First, I introduce the conceptual and empirical distinction between individuals' perceptions of actual wages paid for different occupations and their normative assessment of ethical wages. Up until now, most empirical studies have either focused on measures that do not allow differentiating between these two distinct dimensions or on social welfare functions to incorporate normative judgments into the measurement of inequality (e.g. Bojer, 2003; Lambert, 2001).[4] However, these two dimensions are both conceptually and cognitively distinct, and may thus differ substantially from each other for any given individual.[5] Clearly, the fact that someone perceives a high level of inequality with respect to the actual distribution of wages does not necessarily imply that this individual thinks that the distribution is unfair or unethical. On the contrary, it is easily conceivable that people perceive an effectively unequal distribution of wages as just if, for example, they think that

[3]There are additional factors that presumably play a key role in explaining cross-country differences. For example, Alesina and Giuliano (2009) specifically emphasize the role of cultural and historical factors. Potential feedback from political and economic institutions on preferences over redistribution is the main focus of Alesina and Fuchs-Schündeln (2007), who study the effect of the German reunification on individuals' attitudes towards state intervention.

[4]Amiel *et al.* (1999) present an empirical assessment of different welfare functions based on survey data that are used to retrieve information about individuals' inequality aversion.

[5]The presumption that the conceptual distinction between individuals' perceptions and normative valuations may be important is not new, however. Similar arguments and proposals for measuring distributive justice as the discrepancy between perceived and expected rewards have been made by Alwin (1987), Jasso (1980, 1999), Shepelak and Alwin (1986), and Younts and Mueller (2001), among others. Osberg and Smeeding (2006) use a conceptual and empirical framework similar to the one proposed here, but they neither explore the potential determinants of differences in their subjective measures of inequality nor do they look at the potential link between those measures and others more closely associated with factual political outcomes.

differences in education are responsible for the differences in wages and if they view pay differentials based on education as justified. Moreover, it has been pointed out that individuals' perceptions may themselves be severely tilted (e.g. Alesina and Glaeser, 2004; Bénabou and Tirole, 2006). The potential discrepancy between actual and ethical wage estimates also leads to a natural conceptualization of individuals' normative assessment of market justice simply as the discrepancy between actual and ethical distribution. Indeed, Sen (2000, p.60) made the same point, arguing that "people's attitudes towards, or reactions to, actual income distributions can be significantly influenced by the correspondence - or lack thereof - between (1) their ideas of what is normatively tolerable, and (2) what they actually see in the society around them". The second key feature of this paper is that I not only study different determinants of these new measures of subjective inequality, but also the association between these new measures and more general political preferences such as individuals' support for redistribution by the state. While there is quite some evidence on different determinants of individual preferences over redistribution, much less emphasis has been placed up until now on the empirical association between individuals' preferences over redistribution and their more general political preferences, at least among studies working with individual-level data.[6]

The empirical analysis is based on Swiss survey data from the International Social Survey Program. The focus on Switzerland in the empirical analysis is mainly driven by the belief that Swiss direct democratic institutions, the most important of which is arguably the possibility of budget referenda (Feld and Matsusaka, 2003), and the Swiss multi-party system make it ideally suited for studying the relation between individuals' assessment of market justice and their support for governmental intervention, as well as their stated preferences over different political parties. In this respect, both Frey (1994) and Feld and Kirchgässner (2000) argue that citizens in countries with direct legislation are not only better informed about political issues than citizens in representative democracies, but that they can also use direct legislation to control and sanction their political representatives. This suggests a closer link between individuals' preferences and political outcomes in countries where direct legislation is in place. Moreover, Swiss citizens are not only asked to vote on many referenda and initiatives each year, some of which may involve issues that directly touch on redistributive issues, they are

[6]The situation is somewhat different with studies focusing on cross-country differences in preferences over redistribution, in which case political variables actually play a prominent role; see Alesina and Glaeser (2004), inter alia.

also regularly involved in elections. In contrast to many other countries, there are several political parties in Switzerland with substantial vote shares and moreover, these parties differ quite strongly in a general sense, but also in their specific position towards redistributive policy (e.g. Hug and Schulz, 2007). Based on these arguments, I expect a much closer association between individuals' subjective perceptions of and normative valuations of inequality and their preferences over redistribution by the state as well as their preferences over different political parties in Switzerland than in most other countries.

The remainder of this paper is organized as follows. Section 2 introduces the data source and discusses the key variables. Subjective inequality measures are presented in section 3, along with corresponding descriptive statistics. The main empirical analysis is presented and discussed in section 4. Section 5 concludes.

2. Data

I use data from the International Social Survey Program (ISSP), a collaboration of national survey organizations, presently representing 45 different countries. The ISSP focuses on varying thematic topics and administers a survey each year on main themes such as the environment, religion, the role of government, or social inequality (more information is available on the organization's website, www.issp.org).

The ISSP administered its first survey focusing on issues around the main theme of social inequality in 1987. Two more surveys on the topic followed in 1992 and 1999, and a fourth survey was administered in 2009.[7] I only use the data from 1999 in this paper because Switzerland did not take part in the 1992 survey and because there were several changes in many of the key variables between the first and the third survey. The survey provides data on individuals' perceptions of the income distribution and the factors determining individual incomes, issues of distributive justice, and the role of the government regarding the distribution of earnings.[8]

The data are almost perfectly suited for the analysis of subjective inequality and the assessment of market justice because they contain an interesting and fascinating series of individuals'

[7]The data from the 2009 survey would be interesting to study, as it was conducted in the midst of the global financial crisis, but they will presumably not be available before 2011.

[8]Stamm *et al.* (2003) provide details regarding the collection of the data and an extensive descriptive discussion of the data. The data can be obtained from the Swiss Information and Data Archive Service for the Social Sciences (SIDOS).

subjective estimates of wages paid for in different occupations.

2.1. Individual estimates of actual and ethical wages

More specifically, individuals were asked to estimate actual wages of people working in different occupations.[9] They were also asked to state what they believed to be a fair wage for people working in these occupations. In both cases, all estimates implicitly refer to full-time employment, and individuals gave estimates of net monthly wages (i.e. wages net of social security contributions, but before taxes and transfers) in Swiss francs (CHF).[10] Below, I will simply refer to actual and ethical wages, respectively.[11]

Figure 1

Figure 1 plots individuals' average wage estimates by occupation: the hollow triangles show average actual wage estimates and the hollow circles show average ethical wage estimates for ten different occupations (see also table A.1 in the appendix). Figure 1 for example shows that people think that an unskilled worker in a factory actually earns about 3,100 CHF per month. At the same time they believe that such a worker rather ought to be paid about 3,900 CHF, or almost 800 CHF more than the perceived wage (or about 125% of the actual wage estimate). Similarly, the average estimate of the actual wage of a lawyer amounts to about 18,000 CHF, while the average estimate of his ethical wage corresponds to about 13,000 CHF only (about 72% of its actual estimate).

Moreover, figure 1 shows that there is a clear and unique ranking of the different occupations with respect to the average estimate of their actual monthly wages, from a low of about 3,000 CHF (shop assistant) to a high of more than 32,000 CHF (owner-manager of a large national

[9] The full list of occupations and the exact wording of the questions is given in appendix A. See also the study by Kelley and Evans (1993) for an interesting international comparison of these occupational wage estimates using data from an earlier survey of the ISSP.

[10] As I will detail below, the demand for equalization of market wages will be conceptualized as the discrepancy between actual and just wages (see section 3). The total amount of desired redistribution in occupational wages would be given by comparing actual gross wages to desired net wages (i.e. wages after taxes and transfers). However, because I can only compare wages before taxes and transfers, I can only measure redistribution on top of the redistribution already implemented through the current system of taxes and transfers.

[11] Importantly, note that I am not concerned with factual wages in this paper and that individuals' estimates of actual occupational wages need not necessarily coincide with true occupational wages. Interestingly, however, Stamm *et al.* (2003, p.166) note that average wage estimates and factual wages are surprisingly close. For example, average monthly wages of a salesperson and a skilled factory worker equal 3,030 CHF and 4,660 CHF, respectively (according to the Swiss Labor Force Survey of the years 1998/99). Note how close these numbers are to the corresponding numbers reported in table A.1 (about 3,000 CHF and 4,200 CHF, respectively).

company).[12] Interestingly, the ranking with respect to ethical wage estimates is almost the same as the ranking with respect to actual wages. Indeed, most individuals seem to accept quite large differentials in pay between different occupations.[13]

Furthermore, actual and ethical wage estimates differ within each occupation, but the sign and the size of this difference varies considerably across occupations. The overall picture suggests, however, that people desire a substantial equalization of wages across occupations on average, by simultaneously pushing up bottom wages and pulling down top wages. As a consequence, there are two distinct groups of occupations (neglecting coworkers' wages). The three blue-collar occupations (i.e. shop assistant, unskilled worker, and skilled worker) are characterized by relatively low actual wage estimates and by the fact that ethical wage estimates are higher than actual wage estimates, while the reverse holds true for the remaining six white-collar occupations.

3. Subjective inequality measures

In the following, I will use these wage estimates to construct subjective measures of inequality in market wages, building on a simple analogy with the measurement of objective wage inequality (i.e. the measurement of inequality based on factual wage data). First note that, in principle, we only need to observe the underlying distribution of wages to measure objective inequality because most inequality measures, like Gini's inequality index, are solely a function of the distribution of individual-level wages (e.g. Bojer, 2003; Lambert, 2001).

In the following, it will be most useful to focus directly on the case where occupation-specific wages, instead of individual-level wages, are observed. Formally, assume that the following vector of data is observed

$$\{(y_1, f_1), \ldots, (y_j, f_j), \ldots, (y_k, f_k)\}, \tag{1}$$

with $j = 1, \ldots, k$ indexing the universe of occupations, y_j denoting average occupation-specific

[12] This roughly corresponds to a range of wages from 2,600 USD (shop assistant) to 27,500 USD (owner-manager of a large national company), based on the exchange rate of 1 CHF = 0.86 USD (May 4, 2011).

[13] Note that this also implies that absolute equality with respect to market wages (i.e. identical wages for all occupations) is not judged as a fair distribution. In fact, focusing on those individuals who gave estimates for all nine occupations, only two of them gave exactly the same wage estimate for all nine occupations.

wages, and f_j denoting the population weight of occupation j.[14] It is well known that group-level data on wages can be used to approximate individual-level wage inequality (Gastwirth and Glauberman, 1976). Specifically, I will approximate the distribution of individual-level wages using the distribution of occupation-specific wages, in which case I also need to know the distribution of individuals across occupations (see also appendix B).[15]

Next, note that it is only a small step from here to a simple conceptualization of the measurement of subjective inequality because measuring wage inequality from an individual's point of view is in principle a simple generalization of the measurement of objective inequality. The only difference is that we focus on individuals' subjective estimates of occupation-specific wages instead of factual wages. Formally, the distribution of wages across occupations becomes an individual-specific quantity because different individuals may have different evaluations of occupation-level wages

$$\{(\widehat{y}(i)_1, f_1), \ldots, (\widehat{y}(i)_j, f_j), \ldots, (\widehat{y}(i)_k, f_k)\}, \tag{2}$$

and subjective inequality measures may therefore also differ between individuals. Note that the population weights are treated as fixed parameters, which allows me to focus exclusively on differences between individuals with respect to their evaluation of occupation-specific wages.[16]

But as soon as we talk about subjective wage estimates, it becomes clear that we must be more specific about what we actually mean by them. I thus now introduce the conceptual distinction between the level of wage inequality that individuals perceive to exist and the level of inequality that they judge as ethically tolerable.[17] Thus there are, for each individual, two

[14]Note that $\sum_{j=1}^{k} f_j = 1$ because it is assumed that j indexes the universe of occupations and that therefore the universe of wage earners is represented in (1).

[15]The approximation is the better, the larger the number of distinct occupations and the smaller the variation in wages within occupations. If there is no within-group variation at all, one can perfectly estimate the individual-level wage distribution using group-level data, even if the number of occupations is smaller than the number of individual observations. If there is some variation within groups, the Gini coefficient based on occupation-level data will underestimate the true Gini coefficient based on individual-level data (see, inter alia, Kakwani and Podder, 1973).

[16]Treating the population weights as fixed parameters may also be understood as requiring an individual to estimate the wages for the exact same set of occupations. From this perspective, fixing the population weights across individuals seems natural, even though individuals may have different perceptions of the distribution of workers across different occupations.

[17]Note again that both of these subjective wage estimates may differ from factual wages for any occupation; see also footnote 11.

potentially different wage estimates for each occupation

$$\left\{(\widehat{y}(i)_1^w, f_1), \ldots, (\widehat{y}(i)_j^w, f_j), \ldots, (\widehat{y}(i)_k^w, f_k)\right\}, \tag{3}$$

where superscript w introduces the distinction between individuals' perception of actual wages ($w = actual$) and their normative assessment of ethical wages ($w = ethical$), respectively. There are three noteworthy points. First, subjective wage inequality can differ across individuals because they can have different subjective evaluations of specific occupation-level wages. Second, while one single inequality measure can summarize objective wage inequality, this will usually not be possible for subjective inequality. In this case, inequality will usually be described by a whole distribution of inequality measures across individuals. Finally, the same individual may have very different actual and ethical wage estimates for any specific occupation. For example, an individual may have a much larger ethical than actual wage estimate for an unskilled worker, implying that he or she thinks that people working in this occupation are underpaid from his or her subjective point of view.

Unfortunately, subjective wage estimates on such a detailed occupation level as presumed above are not available. However, one can always try to approximate the vector of occupation-level wages using data at a broader level of aggregation. In the most simple case, there are only two distinct groups of wage earners representing the bottom and the top of the wage distribution (i.e. a bottom and a top group), and the resulting distribution of grouped wage data can be fully characterized by three statistical moments, as detailed in appendix B. In the case of subjective wage data, both the distribution of actual and of ethical wages can be described by such a triple of moments:

$$\left(\widehat{y}(i)_{\text{bottom}}^{\text{actual}}, \widehat{y}(i)_{\text{top}}^{\text{actual}}, f_{\text{bottom}}\right) \tag{4a}$$

$$\left(\widehat{y}(i)_{\text{bottom}}^{\text{ethical}}, \widehat{y}(i)_{\text{top}}^{\text{ethical}}, f_{\text{bottom}}\right) \tag{4b}$$

Let $\widehat{y}(i)_{\text{bottom}}^w$ and $\widehat{y}(i)_{\text{top}}^w$ denote individual i's wage estimate for the bottom and the top part of the overall wage distribution, respectively, and let f_{bottom} denote the population share of the bottom group. The information contained in (4a) is thus used to approximate an individual's perceived distribution of actual wages, while (4b) is used to approximate his or her evaluation

of how the ethical distribution of market wages should look like.

I use individuals' estimates of occupation-specific wages to compute the two wage components of (4a) and (4b), respectively. More specifically, $\widehat{y}(i)_{\text{bottom}}$ is computed as the simple average of an individual's wage estimates of the three blue-collar occupations (i.e. shop assistant, unskilled worker, skilled worker). Analogously, $\widehat{y}(i)_{\text{top}}$ is computed as the simple average of an individual's wage estimates for the remaining six white-collar occupations (see figure 1 and appendix A).[18] Finally, the fraction of individuals belonging to the bottom group, f_{bottom}, is estimated from the actual distribution of individuals across occupations in the sample amounts to about 0.77.[19] Because f_{bottom} does not vary between individuals, it does not affect individuals' ranking with respect to subjective inequality measures and thus effectively has no impact on the qualitative pattern of results.

Clearly, working with only two distinct groups is a simplification. However, a more disaggregated analysis at this stage is limited by the fact that there are only nine different wage estimates (i.e. those given in figure 1) available to construct the corresponding group-specific wages.[20] Because more elaborate measurements yield very similar subjective inequality measures, and because some additional observations are lost when using more than two groups, I focus on the setting using two different groups of wage earners in the following.[21]

[18] One advantage from aggregating wage estimates over different occupations is that the problem of missing data can be mitigated to some extent, as averaging over several occupations allows me to compute subjective inequality measures as long as an individual gave at least one wage estimate for each of the two groups of occupations.

[19] Specifically, the distribution of occupations in the sample is given by the International Standard Classification of Occupations (ISCO). Based on this variable, I estimate f_{bottom} as $f_{\text{bottom}} = n^{-1} \sum_{i=1}^{n} \mathbf{1}(\text{ISCO}_i \in [3, 9])$, the fraction of individuals neither belonging to the group of "legislators, senior officials and managers" nor to the group of "professionals" (these two groups in turn define the top group of occupations).

[20] Moreover, four of these nine wage estimates refer to the same, and rather narrow (only about 6% of the sample belong to this group of occupations) group of occupations best described as "legislators, senior officials and managers" (i.e. occupations with major ISCO code equal to 1). Similarly, both "unskilled worker" and "shop assistant" belong to the heterogeneous group of lower skilled occupations.

[21] One feasible alternative uses three groups of wage earners, distinguishing major ISCO codes 1, 2, and 3-9. In this case I estimate the wage of the first group (representing major ISCO code 1, "legislators, senior officials, and managers") using the average of the wage estimates of a minister, a judge, a chairman, and a manager/owner of a factory and the wage of the second group (representing major ISCO code 2, "professionals") using the average of the wage estimates of a doctor and a lawyer. It is also possible to distinguish between major ISCO codes 1, 2, 3 and 4-9. In this case I estimate the wage of the first two groups as detailed above; the wage of the third group (representing major ISCO code 3) is estimated using the wage estimate of a skilled worker; the wage of the fourth group (representing major ISCO codes 4 to 9) is estimated using the average of the wage estimates of a shop assistant and an unskilled worker. It turns out that the resulting inequality measures are virtually identical: the correlation between the two measures of actual inequality, ethical inequality, and the assessment of market justice based on two versus three groups equals 0.979, 0.980, and 0.978, respectively. Similarly, the correlation coefficient between the measures of actual inequality, ethical inequality, and the assessment of market justice based on two versus four groups of wage earners are equal to 0.9702, 0.9900, and 0.9764, respectively.

Given estimates of all components of (4a) and (4b), constructing the individual-level inequality measures is straightforward. The result from appendix B implies that the two subjective inequality measures (i.e. Gini coefficients for actual and ethical wage distribution) are given by the following simple expressions:

$$G(i)^{\text{actual}} = f_{\text{bottom}} - q(i)^{\text{actual}}_{\text{bottom}}, \text{ and} \tag{5a}$$

$$G(i)^{\text{ethical}} = f_{\text{bottom}} - q(i)^{\text{ethical}}_{\text{bottom}}, \tag{5b}$$

with $q(i)^{w}_{\text{bottom}}$ denoting the wage share of the bottom group:[22]

$$q(i)^{w}_{\text{bottom}} = (\widehat{y}(i)^{w}_{\text{bottom}} \cdot f_{\text{bottom}})/\widehat{y}(i)^{w} \quad \text{for} \quad w = \{\text{actual}, \text{ethical}\} \tag{6}$$

As before, (5a) refers to an individual's actual wage estimates and (5b) to his or her ethical wage estimates, respectively. The individual-level Gini coefficient is thus simply given by the difference in the population share of the bottom group and the estimated wage share of the bottom group.[23] Because I treat the size of the two groups as the same for the actual and the ethical wage distribution and as the same across individuals, all differences in $G(i)^{w}$ between individuals must be driven by differences in individuals' subjective wage estimates for the two groups.[24]

Using the discrepancy between an individual's actual and ethical wage inequality as an empirical measure of his or her normative assessment of market justice also appears natural. In the empirical analysis below, I will focus on the relative difference in the two inequality indices

$$R(i) = \left[1 - \left(\frac{G(i)^{\text{ethical}}}{G(i)^{\text{actual}}}\right)\right], \tag{7}$$

which measures the degree to which an individual wants to decrease or increase the level

[22]Note that an individual's overall wage estimate is given by a weighted average of the wage of the bottom group and of the top group, i.e. $\widehat{y}(i)^{w} = \widehat{y}(i)^{w}_{\text{bottom}} \cdot f_{\text{bottom}} + \widehat{y}(i)^{w}_{\text{top}} \cdot (1 - f_{\text{bottom}})$.

[23]Note that $G(i)^{w}$ could in principle be negative if the estimated wage share of the bottom group is larger than the corresponding population share (a case not ruled out a priori). However, there is only one single individual in the sample with a negative value on ethical inequality in market wages.

[24]One can imagine that individuals also would ideally prefer a distribution of occupations different from that they actually perceive to exist. Unfortunately, however, there are no corresponding questions in the survey that would make an analysis of desired changes in the distribution of occupations feasible.

of inequality in market wages (as a percentage of the actual level of inequality). Note that $R(i)$ relates to desired changes in market wages because both actual and ethical wages are measured before taxes and transfer payments. The measure may therefore also be thought of as an indicator of an individual's normative assessment of market injustice, or rather as the absence of market justice, as high values of $R(i)$ imply a high demand for equalization of market wages between different occupations. Importantly, the measure fits the intuition that the assessment of market injustice is high when there is a large discrepancy between an individual's actual and ethical assessment of wage inequality. Analogously, there is no feeling of market injustice if there is no discrepancy between actual and ethical inequality in market wages, no matter how high or low the actual level of inequality is.

The obvious downside of this measure is that it neither tells us anything about the desired redistribution from the economically active part of the population to the inactive part (e.g. unemployed workers, retirees) nor about redistribution through the provision of public goods, most notably through education. This measure has a much more precise meaning than conventional measures of preferences over redistribution, however, which are usually given by individuals' agreement with some rather vague statement that inequality is too high.

3.1. Descriptive statistics

Not surprisingly, table 1 shows that ethical wage estimates for the bottom group are higher on average than actual wage estimates (average actual wage estimates equal about 3,450 CHF, while ethical wages are about 4,280 CHF). At the same time, however, people would like to decrease wages of the top group, i.e. ethical wages are lower than actual wages for the top end of the overall wage distribution (actual wages of about 22,630 CHF versus ethical wages of about 16,750 CHF). Consequently, the ethical distribution of market wages looks different from the actual distribution of market wages for most individuals. Indeed, panel (c) of table 1 shows that the average actual inequality amounts to about 0.41, while the average ethical wage inequality only equals about 0.29. The table further shows that only a negligible fraction of individuals favors absolute equality of wages (actually only one individual), and that not a single individual perceives no wage inequality at all.

Table 1

Panel (a) of figure 2 shows the joint distribution of the two subjective inequality measures. Clearly, most individuals desire a lower level of wage inequality than what they actually perceive to exist, as most individuals are situated below the 45° line. The figure also shows that people not only hold widely different beliefs about what what is judged as a fair distribution of wages across occupations, but that they also have markedly different perceptions of reality. Also, there is considerable variation in normative beliefs for any given level of perceived wage inequality, and vice versa. Panel (c) of table 1 shows that the average desired equalization of market wages equals about 0.31, which implies that the average individual would like to decrease inequality in market wages across occupations by about a third, relative to the perceived level of inequality.

Figure 2

As a consequence, most individuals have some positive demand for equalization of market wages, as shown in panel (c) of table 1. Thus most people would favor a more equal distribution of market wages, relative to the distribution of market wages they actually perceive, as shown in panel (b) figure 2.[25] Furthermore, there is a remarkable skew in the distribution towards zero implying that, even though a majority of individuals desires a reduction in inequality, most of the people desire rather small changes in market wages only. A final remarkable feature is that even though most individuals would like to change the distribution of market wages, overall actual wage estimates are on average very similar to overall ethical wage estimates. This is evident from the comparison of actual overall wage estimates to ethical overall wage estimates (see last row of panel (a) and (b), respectively). The actual overall wage estimate is 7,829 CHF, very close to the ethical overall wage estimate of 7,126 CHF. It thus seems that people are somehow aware that increasing wages at the bottom of the distribution must be offset by countervailing decreases at the top end of the wage distribution.

[25]Figure 2 also shows that, perhaps somewhat surprisingly, there are some individuals for whom the ethical wage inequality is higher than actual wage inequality, resulting in a negative demand for wage equalization. Further scrutiny of these few observations shows, however, that the reason for their negative demand for equalization is not that they want to redistribute from the bottom to the top. Instead, these individuals not only want to increase the wage of the bottom group, but also that of the top group, and the desired increase for the top group is higher than that of the bottom group. Also note that only a tiny fraction of all individuals would either like to eliminate all existing wage inequalities or to implement no change in the wage distribution at all (see table 1).

4. Results

This section presents two distinct sets of empirical results. The first documents the links between individuals' attitudes towards inequality, their self-interest in redistribution, and the different subjective inequality measures. Besides being of interest on their own, these results will also facilitate the comparison to existing evidence. The second set of results provides evidence on the hypothesized link between subjective inequality measures and the assessment of market justice on the one hand and individuals' propensity to support redistributive policies and their support for those political parties implementing such policies in the end on the other hand.

4.1. The assessment of market justice

I first present a simple statistical model for the observed variation in individuals' normative assessment of market justice. I follow the previous literature and focus primarily on determinants that relate to perceptions of actual determinants and normative beliefs about just determinants of pay on the one hand and self-interested motives on the other hand (see Fong *et al.*, 2005, for a recent overview). Specifically, I run several simple linear regression models of the following form to empirically assess the importance of different factors in explaining the demand for equalization of market wages:

$$m_i = \alpha + \text{beliefs}_i\gamma_1 + \text{interest}_i\gamma_2 + \text{controls}_i\beta + \epsilon_i, \tag{8}$$

where m_i denotes either an individual's assessment of actual or ethical wage inequality (that is, either $G(i)^{\text{actual}}$ or $G(i)^{\text{ethical}}$) or, alternatively, an individual's normative assessment of market justice, i.e. his or her desired degree of equalization of market wages across different occupations (i.e. $R(i)$).

The first two vectors of regressors, beliefs_i and interest_i, refer to individuals' beliefs and perceptions with respect to distributional issues and to variables describing individuals' self-interested motives for redistribution, respectively. More specifically, I include the following four variables which relate to the factors that people think are (or ought to be) important in determining individuals' pay: the belief that luck and effort should be important on the one hand, and the perception that ascribed and acquired skills are important on the other hand.

The first two of these variables refer to individuals' normative beliefs about factors that should be important from their points of view; the latter two describe individuals' perceptions of the factual determinants of pay differentials. I further include an individual's income (Meltzer and Richard, 1981), his or her evaluation of whether he or she believes that his or her pay is appropriate (Clark and Oswald, 1996; Luttmer, 2005), and an index of experienced social mobility (Piketty, 1995) as measures of self-interested motives for demanding redistribution. The third vector (controls_i) denotes additional control variables.[26] The inclusion of these additional control variables is meant to mitigate confounding by unobserved factors such as risk aversion (e.g. Carlsson *et al.*, 2005). The main parameters of interest are γ_1 and γ_2, and the resulting estimates are given in table 2.

Table 2

The first two columns show estimates for the distribution of actual inequality. The first column includes individuals' perceptions and beliefs as well as self-interested motives as regressors, the second column includes additional control variables (see footnote 26). The first thing to note is that most coefficients are not statistically different from zero (even though most estimates have the expected sign), with the exception of the two variables describing people's perceptions of whether ascribed and acquired skills are actually important in determining differences in pay (personal income is only significant if additional controls are left out of the model). However, the quantitative effects of these two variables are rather small. An increase in the perception that ascribed skills determine income by one standard deviation (which is equal to about 0.758 units of the corresponding variable, as shown in table A.2) implies a hypothetical increase in actual inequality by about 0.009. This corresponds to a relative increase of about 2.2%, if evaluated at the mean of the dependent variable ($= 0.012 \cdot 0.758/0.408$). A similar reasoning shows that a one standard deviation increase in the perception that acquired skills are important in determining pay leads to a relative decrease in actual inequality of about 2.4% (i.e. $100\%(-0.016 \cdot 0.609)/0.408 = -2.4\%$).

[26]The full list of additional control variables is as follows: age in years (and its square), education (highest attained level, in years), a female dummy, a dummy indicating foreign citizenship, a dummy indicating residence in the German-speaking part of Switzerland, a dummy for residency in an urban area, two dummy variables indicating unemployment and non-employment (employment is the reference category), a scale measuring individuals' perception of conflicts, an occupational prestige scale, and individuals' political self-assessment on a simple left-right scale. The definitions of these variables are given in appendix A.

The next two columns show analogous estimates for ethical inequality in market wages. In this case, the two variables describing the factors that ought to determine pay are statistically different from zero, and they both have quite a substantial association with ethical inequality. An increase in the belief that needs should be important in determining pay is associated with a relative decrease in ethical inequality of about 5% ($= (-0.014 \cdot 1.011)/0.285$). Similarly, a hypothetical increase in the belief that personal effort should determine income is associated with an increase in ethical wage inequality of about 5.8% ($= (0.024 \cdot 0.45)/0.285$). In contrast to actual inequality, self-interested motives (i.e. personal income and income dissatisfaction) are also associated with the assessment of ethical inequality in a statistically significant manner. Note further that the goodness-of-fit for ethical inequality is about twice as large as for actual inequality, suggesting that perceptions are much more idiosyncratic than ethical beliefs.

The last two columns show regression models for the desired equalization of market wages. All regressors have the expected sign: people who think that effort and acquired skills are (or should be) important tend to have a lower demand for equalization of market wages, while individuals who believe that one's needs do (or should) determine pay tend to have a higher demand. More importantly, however, note that the estimated effects are quite large in substantive terms. For example, an increase in the belief that effort should be important in determining one's pay by one standard deviation (which is equal to about 0.45 units of the corresponding variable) implies a hypothetical decrease in the demand for equalization of wages of -0.033, or a relative decrease of almost 11% (if evaluated at the mean of the dependent variable, which equals 0.304). The belief that needs should be important in determining pay has an effect of about equal size but opposite sign: a one standard deviation increase in this variable implies an increase in the demand for equalization of market wages of about 0.025 (or about 8%). Analogously, the relative effects of changing the perception that ascribed and acquired skills are important in determining pay (by one standard deviation) amount to 4% and -5.2%, respectively. Self-interested motives also have the expected sign. Personal income has a significant and large negative effect on the demand for wage equalization. The model in column 5 yields a semi-elasticity of the demand for equalization of market wages with respect to income of about -0.04. Thus doubling an individual's income would imply a decrease in the demand for equalization by more than 10%, if evaluated at the mean of the dependent variable.[27] Probably

[27] Nonetheless, even the richest individuals in the sample have a positive demand for equalization of market

more surprising, there is also a large and statistically significant effect stemming from income dissatisfaction on the demand for equalization of market wages. Individuals who think that they are not paid enough themselves have a much higher demand for equalization, even holding their absolute level of income constant. On the other hand, the mobility index turns out to have a very small effect in both economic and statistical terms. The model shown in the last column again includes additional control variables. This does not change the qualitative pattern of the results, which in turn implies that the correlation between the different sets of regressors is not very pronounced. However, the additional control variables have some explanatory power, as shown by a comparison of the adjusted R-squared for the model in the second to last column (about 9.2%) to the model in the last columns (about 14.3%).

The overall pattern of these results is very similar to previous evidence, showing that self-interested motives as well as perceptions and normative beliefs are important in explaining observed differences in the desire to equalize market wages. However, the conceptual distinction between actual and ethical inequality adds some interesting insights. First, differences in the perception of actual inequality are surprisingly large, even though not as large as differences in the evaluation of ethical inequality. Second, and quite intuitively, there is more idiosyncratic variation in the evaluation of actual inequality than in the case of ethical wage inequality (note that the R-squared in the case of actual inequality is only about half as large as for ethical inequality). Finally, the fact that the included regressors have very different associations with the two inequality indices suggests that actual and ethical inequality indeed are cognitively distinct concepts.

4.2. Support for redistribution by the state

Given that the actual amount of redistribution is ultimately the outcome of a political process, studying whether individuals' propensity to support redistribution by the state is related to their assessment of market justice may yield evidence on the hypothesized association between individuals' preferences and factual political outcomes.

To do so, I use a simple survey measure which ranges from 1 to 5, with 5 denoting the highest level of support for redistribution by the state (see appendix A).[28] I then regress this

wages. This is evident from an unconditional analysis of the data, showing that almost all individuals have a positive demand for equalization of market wages (see figure 2 again).

[28]Regressions using a dichotomized measure denoting any positive support for redistribution by the state

measure on either the demand for wage equalization or on the two inequality indices along with some additional control variables

$$\text{support}_i = \alpha + m_i\zeta + \text{interest}_i\gamma_1 + \text{beliefs}_i\gamma_2 + \text{controls}_i\beta + \epsilon_i, \tag{9}$$

where m_i denotes the inclusion of either the demand for equalization of market wages or the two subjective wage inequality measures as key regressor(s). The three vectors of control variables are the same as in the analysis before. Results are shown in table 3.

Table 3

The key regressor in the first two columns is the demand for equalization of market wages. Because the previous analysis has shown that this measure is strongly associated with individuals' perceptions and beliefs and as well as with self-interested motives, I show both estimates including and omitting these variables as regressors. In both cases, the assessment of market injustice has a positive and statistically significant effect on the support for the welfare state in all models, whether individuals' beliefs or self-interest motives are included as regressors or not and, as before, the estimated effect turns out to be large: increasing the demand for wage equalization by 0.198 (which corresponds to one standard deviation of the regressor) yields a predicted increase in the dependent variable of about 0.25 ($= 1.277 \cdot 0.198$), which is about a fourth of the standard deviation of the dependent variable. Evaluated at the mean of the dependent variable, this corresponds to a relative effect of about 8% ($= 100\%[(0.198 \cdot 1.277)/3.186]$). As expected, the second column shows that the inclusion of additional regressors leads to a somewhat smaller coefficient, but the effect nonetheless remains large in both substantive and statistical terms.

In the remaining two columns of table 3, the two subjective inequality measures are included as key regressors (instead of the demand for equalization of market wages). Again, both variables turn out to have large and significant effects on individuals' support for redistribution by the state; controlling for additional variables does not make much of a difference. I therefore focus on the results in the final column. First, hypothetically increasing actual inequality by one standard deviation (i.e. about 0.95) leads to a predicted increase in the support for

yield qualitatively similar results (results not shown).

redistribution by the state of almost 0.1, or about one standard deviation of the dependent variable. The estimates imply that the elasticity of the support for redistribution by the state with respect to actual inequality is about 0.4 ($= (0.4 \cdot 3.345)/3.186$). Similarly, the elasticity of market injustice with respect to the ethical inequality index is about -0.25 ($= (0.285 \cdot -2.796)/3.186$).

Overall, the results suggest that individuals who have a high demand for equalization of market wages, which may arise either because they perceive that there is a high level of occupational wage inequality or because they think that only a low level of inequality is normatively acceptable, have a significantly higher propensity to be supportive of redistribution by the state. This in turn is likely to imply that these individuals are also more supportive of a system of taxes and transfer payments that explicitly aims at reducing the dispersion in market wages. One would thus probably expect these individuals to differ with respect to their party preferences as well, assuming that the parties compete against another for votes by offering different redistributive policies.

4.3. Party identification

Thus I next turn to the association between individuals' stated preferences over political parties and the different measures of subjective inequality. To do so, I estimate some simple regression models in which individuals' stated preference for some political party is the dependent variable. Specifically, I model the probability that an individual states preference for some specific political party j,

$$Pr(\text{Party}_i = j | m_i, \text{beliefs}_i, \text{interest}_i, \text{controls}_i), \tag{10}$$

using a multinomial logit model for $j = 0, 1, \ldots, 5$.[29] As above, m_i denotes the inclusion of either the demand for equalization of market wages or the two subjective inequality measures as key regressor(s), and beliefs_i, interest_i and controls_i are the same sets of control variables as

[29] I only consider the five largest (with respect to actual voting shares) parties in Switzerland, denoted by $j = 1, 2, \ldots, 5$ (preference for any other or no party at all is denoted by $j = 0$). These are the Liberal Party ("FDP Die Liberalen"), the Christian Democrats (CVP, "Christlichdemokratische Volkspartei"), the right-of-center Swiss People's Party (SVP, "Schweizerische Volkspartei"), the Social-democratic Party (SPS, "Sozialdemokratische Partei der Schweiz"), and the Green Party (GPS, "Grüne Partei der Schweiz"). The Swiss Federal Council, the executive council at the national level, consists of members of the first four parties mentioned (see also Hug and Schulz, 2007).

in the models shown before. The parameter of main interest in the case is the average partial effect of m_i on stated party preference, summarizing the effect of the subjective inequality measure on the stated party preference. However, the preceding section has shown the various moments describing subjective evaluations of the wage distribution are clearly correlated with at least some of the control variables. As before, I therefore run the same set of regressions on a restricted set of control variables also (i.e. only including socio-economic controls).

Table 4

The top panel of table 4 shows average partial effects when using the restricted set of control variables only, while the bottom panel includes the full set of regressors. First note that the difference in the results between the top and the bottom panel is as expected, in that in the models with the full set of control variables a significant part of the effect of R_i (G_i^w) on party preference is absorbed by the controls. More importantly, all point estimates have the expected sign. The assessment of market injustice has a negative effect on the probability of stating preference for the Liberal Party (FDP), but a positive effect on stating preference for one of the two left-of-center parties (SPS and GPS). Interestingly, the amount of desired redistribution also has a positive effect on stating preference for the right-of-center Swiss People's Party (SVP) and the size of the effect is essentially the same as the effect for stating preference for the left. The only party for which there is no effect at all is Christian-Democratic party (i.e. the point estimate is essentially zero). Also note though that only the effect on stating preference for the Liberal Party (FDP) reaches statistical significance at any conventional level.

Again, the size of the estimated effects is quite large. For example, a hypothetical increase in the demand for wage equalization by one sample standard deviation (which is equal to about 0.2) would lower the probability of favoring of the FDP by about 7% ($= -0.346 \cdot 0.2 \cdot 100\%$). Taking the mean of the dependent variable into account and re-expressing the effect as an elasticity, it appears even larger: Evaluated at the sample mean of the demand for equalization ($\simeq 0.3$), the estimated elasticity of the probability of casting a vote in favor of the FDP with respect to the dependent variable equals about -0.75 ($= (0.3 \cdot -0.346)/0.139$).

The same qualitative pattern of results is evident if the two subjective inequality measures are used as regressors (instead of the single measure of market justice). Again, there are no statistically significant effects regarding the preference for the Christian-Democratic party

whatsoever, but at least one of the two subjective inequality measures has an effect statistically different from zero for all of the other parties. First, identification with the FDP is significantly shaped by both the perceived and the desired level of wage inequality. That is, individuals who perceive wage inequality to be low, and/or whose desired wage inequality is high have a higher probability of stating preference for the FDP. In the case of the three remaining political parties (SVP, SPS, and GPS), the reverse pattern holds, i.e. people with a high level of perceived occupational wage inequality and/or a low level of ethical inequality tend to state preference for one of these three parties. Again, the effects turn out to be large. Considering the effects on the probability of being in favor of the FDP shows that an increase in the perceived wage inequality by one sample standard deviation (about 0.41) and an increase in the ethical wage inequality by one standard deviation (about 0.29) imply a decrease (increase) in the probability of being in favor of the FDP by about 31% ($= -0.770 \cdot 0.41 \cdot 100\%$) and 21% ($= 0.728 \cdot 0.29 \cdot 100\%$), respectively. Also, the bottom panel again shows that the inclusion of more control variables does not change the relevant point estimates by much.

Even though the results do not fit a simple left-right pattern, they are perfectly consistent with effective election results in Switzerland. Besides the rather obvious negative effect on identification with the Liberal Party and the positive effect on identification with the Social-democratic Party, the results also coincide with what is known about the more peculiar composition of the electorate of the Swiss People's Party (McGann and Kitschelt, 2005). The apparently surprising result that a high demand for wage equalization is associated with stating preference for the far-right is actually well in line with what is known about the electorate of this party. Most importantly, the party succeeded in attracting a substantial fraction of blue-collar workers who tend to be in favor of redistributive policies (e.g. Oesch, 2008).

5. Conclusions

A simple conceptual framework based on individuals' subjective estimates of occupation-specific wages appears to be a fruitful approach for describing individuals' subjective evaluations of wage inequality and their demand for equalization of market wages. Because the framework explicitly differentiates between individuals' perceptions of actual wages and their normative evaluations of ethical wages, it leads to a simple measure for the demand for wage

equalization as the discrepancy between an individual's assessment of the perceived and the desired level of inequality. Not surprisingly, there is considerable variation both in the actual and the ethical level of inequality in market wages. Nonetheless, there is strong support for some equalization of wages across occupations for virtually all individuals and it thus turns out that most individuals indeed demand a strictly more equal distribution of market wages. In most cases, a positive demand for wage equalization is a combination of a desire to increase wages at the bottom and to decrease wages at the top of the distribution, which also reflects a discrepancy between the perceived and the desired distribution of occupational wages. At the same time, most individuals accept quite large wage differences between occupations. This also suggests that, for most people, absolute equality is not the reference distribution to which the actual distribution of wages is compared to.

The empirical analysis further shows that not only individuals' perceptions about the determinants of pay and their normative beliefs over distributional issues, but also their self-interested motives all explain some of the observed differences in the demand for equalization of market wages. In line with the existing empirical evidence, I find that individuals' personal income is a remarkably weak predictor of the assessment of market injustice, given its prominent role in the theoretical literature, and that norms and perceptions related to distributional justice appear to have an impact on the demand for wage equalization that appears to be at least as important. The key results of the study provide indirect evidence on the hypothesized link between subjective inequality measures on the one hand and political outcomes on the other hand. I find that the two subjective inequality indices as well as the normative assessment of market justice have substantially large associations with individuals' propensity to support redistribution by the state as well as with their stated party preferences. This strongly suggests that redistributive preferences indeed may filter through into political outcomes such as the factual level of redistribution.

Finally, the framework proposed in this paper appears to be well suited for the empirical description of individuals' perceptions of wage inequality, of the distribution of wages that individuals judge as a fair, as well as of their demand for equalization of market wages. Therefore, applying the proposed framework to data from other countries and/or to other points in time may provide interesting insights and foster our understanding of country-level differences with respect to factual inequality as well as to differences in the effective size and impact of

redistributive policies.

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Table 1: Subjective inequality measures

	Mean	Standard deviation
(a) Actual distribution of market wages		
Wage, bottom group	3,449.972	552.407
Wage, top group	22,626.347	10,076.362
Population share, bottom group	0.772	
Overall wage	7,829.463	2,393.588
(b) Ethical distribution of market wages		
Wage, bottom group	4,276.207	680.431
Wage, top group	16,753.367	8,327.335
Population share, bottom group	0.772	
Overall wage	7,125.734	2,027.020
(c) Subjective inequality measures and market justice		
Actual inequality	0.408	0.095
$\mathbf{1}(\text{Actual inequality} = 0)$	0.000	0.000
Ethical inequality	0.285	0.107
$\mathbf{1}(\text{Ethical inequality} = 0)$	0.002	0.041
Equalization of market wages	0.305	0.198
$\mathbf{1}(\text{Equalization} < 0)$	0.030	0.172
$\mathbf{1}(\text{Equalization} = 0)$	0.005	0.071
$\mathbf{1}(0 < \text{Equalization} < 1)$	0.961	0.193
$\mathbf{1}(\text{Equalization} = 1)$	0.002	0.041
$\mathbf{1}(\text{Equalization} > 1)$	0.002	0.041

Notes: All variables are defined in the main text. The numbers in panel (a) and panel (b) refer to monthly wages in Swiss francs (before taxes and transfers, but after the deduction of social security contributions; 1 CHF $\simeq$ 0.86 USD). All calculations are based on 593 observations. $\mathbf{1}(\cdot)$ denotes the indicator function.

Table 2: Subjective inequality and the assessment of market justice

	Actual inequality		Ethical inequality		Equalization of wages	
Mean	0.408	0.408	0.285	0.285	0.304	0.304
Standard deviation	0.095	0.095	0.108	0.108	0.198	0.198
Perceptions and beliefs						
Should be important: needs	−0.005	−0.005	−0.014***	−0.011**	0.024***	0.019**
	(0.004)	(0.004)	(0.004)	(0.005)	(0.009)	(0.009)
Should be important: effort	0.004	−0.000	0.037***	0.024**	−0.074***	−0.050***
	(0.009)	(0.009)	(0.009)	(0.010)	(0.017)	(0.018)
Is important: ascribed skills	0.013**	0.012**	0.002	0.000	0.016	0.018
	(0.005)	(0.005)	(0.006)	(0.006)	(0.012)	(0.011)
Is important: aquired skills	−0.014**	−0.016**	0.002	−0.003	−0.026**	−0.018
	(0.006)	(0.007)	(0.007)	(0.007)	(0.013)	(0.013)
Self-interested motives						
ln(income)	0.021***	0.005	0.030***	0.016*	−0.042***	−0.033**
	(0.006)	(0.008)	(0.007)	(0.008)	(0.012)	(0.015)
Mobility	−0.004	−0.001	−0.001	0.003	−0.002	−0.008
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)
Income dissatisfaction	−0.007	−0.014	−0.031**	−0.039***	0.059***	0.067***
	(0.010)	(0.011)	(0.013)	(0.015)	(0.021)	(0.023)
Additional controls included?	No	Yes	No	Yes	No	Yes
Number of observations	593	593	593	593	593	593
p-value (F-statistic)	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-Squared	0.031	0.070	0.082	0.147	0.092	0.143
R-Squared	0.043	0.100	0.093	0.174	0.103	0.171

Notes: *, **, *** denotes statistical significance on the 10%, 5%, and 1% level, respectively. Robust standard errors are given in parentheses. The following variables are used as additional controls: an occupational prestige scale, two dummies for employment status, age in years (and its square), a female dummy, education in years, a dummy for urban residency, a dummy for living in the German-speaking part of Switzerland, a dummy for foreign citizenship, political self-assessment (on a simple left-right scale), and a scale describing the perception of conlicts. See appendix A for more details

Table 3: Support for redistribution by the state

	Support for redistribution by the state			
Mean	3.186	3.186	3.186	3.186
Standard deviation	1.055	1.055	1.055	1.055
Equalization of market wages	1.277***	1.051***		
	(0.218)	(0.212)		
Actual inequality			3.762***	3.345***
			(0.535)	(0.533)
Ethical inequality			−3.353***	−2.796***
			(0.519)	(0.510)
Baseline controls included?	Yes	Yes	Yes	Yes
Additional controls included?	No	Yes	No	Yes
Number of observations	590	590	590	590
p-value (F-statistic)	0.000	0.000	0.000	0.000
Adjusted R-Squared	0.184	0.218	0.203	0.234
R-Squared	0.202	0.245	0.222	0.262

Notes: *, **, *** denotes statistical significance on the 10%, 5%, and 1% level, respectively. Robust standard errors are given in parentheses. The dependent variable takes on integer values between 1 and 5, where 5 indicates the highest possible support (see appendix A for details). See also notes of table 2.

Table 4: Party identification

	FDP		CVP		SVP		SPS		GPS	
Fraction	0.139		0.090		0.137		0.230		0.030	
Left-right scale	5.91		4.78		5.68		3.58		2.94	
(a) Restricted set of control variables										
Equalization of wages	−0.346***		0.008		0.106		0.065		0.072	
	(0.080)		(0.067)		(0.071)		(0.092)		(0.038)	
Actual inequality		−0.821***		−0.121		0.472**		0.494*		−0.045
		(0.226)		(0.184)		(0.203)		(0.247)		(0.095)
Ethical inequality		0.826***		−0.037		−0.219		−0.203		−0.158
		(0.207)		(0.169)		(0.170)		(0.225)		(0.096)
Number of observations	534	534	534	534	534	534	534	534	534	534
p-value (χ^2)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R-Squared	0.177	0.181	0.177	0.181	0.177	0.181	0.177	0.181	0.177	0.181
(b) Full set of control variables										
Equalization of wages	−0.311***		0.016		0.115		0.071		0.069*	
	(0.082)		(0.069)		(0.074)		(0.094)		(0.037)	
Actual inequality		−0.770***		−0.071		0.486**		0.533**		−0.009
		(0.228)		(0.188)		(0.212)		(0.257)		(0.100)
Ethical inequality		0.728***		−0.071		−0.251		−0.219		−0.160
		(0.214)		(0.176)		(0.179)		(0.234)		(0.098)
Number of observations	534	534	534	534	534	534	534	534	534	534
p-value (χ^2)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R-Squared	0.200	0.205	0.200	0.205	0.200	0.205	0.200	0.205	0.200	0.205

Notes: *, **, *** denotes statistical significance on the 10%, 5%, and 1% level, respectively. Table entries are average partial effects derived from a multinomial logit model (standard errors are computed using the delta method). The regressions in panel (a) only include the socio-economic control variables. The dependent variable is a variable indicating party identification with one of the five largest parties in Switzerland, the baseline being preference for no or any other party (see appendix A for details). The regressions in panel (b) additionally include perceptions/beliefs as well as self-interested motives for redistribution. The row labelled "Fraction" denotes the fraction of the sample stating preference for any political party. The row labelled "Left-right scale" at the top shows sample averages on a simple left-right scale for those individuals stating preference for any specific political party (see appendix A). See also notes of table 2.

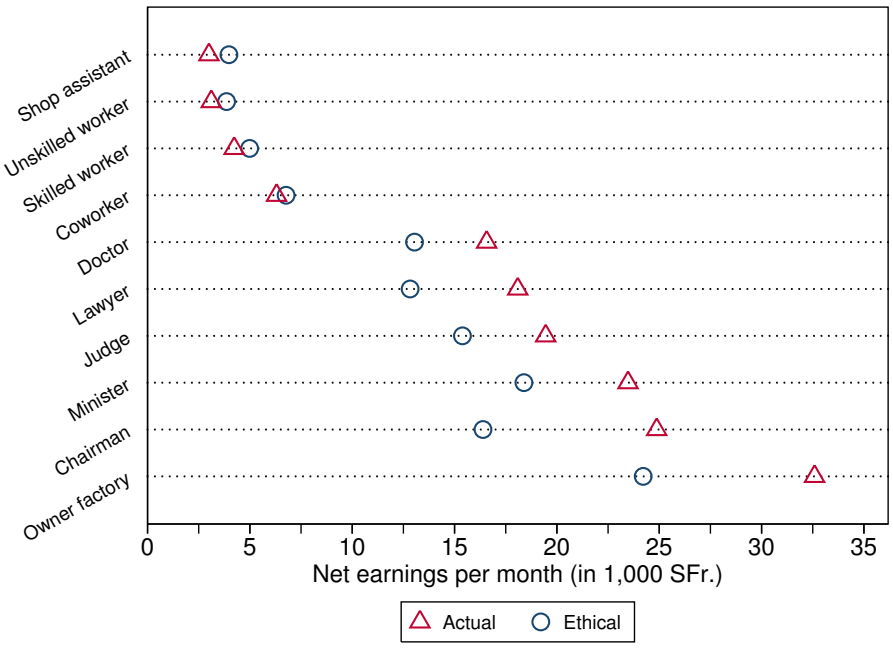
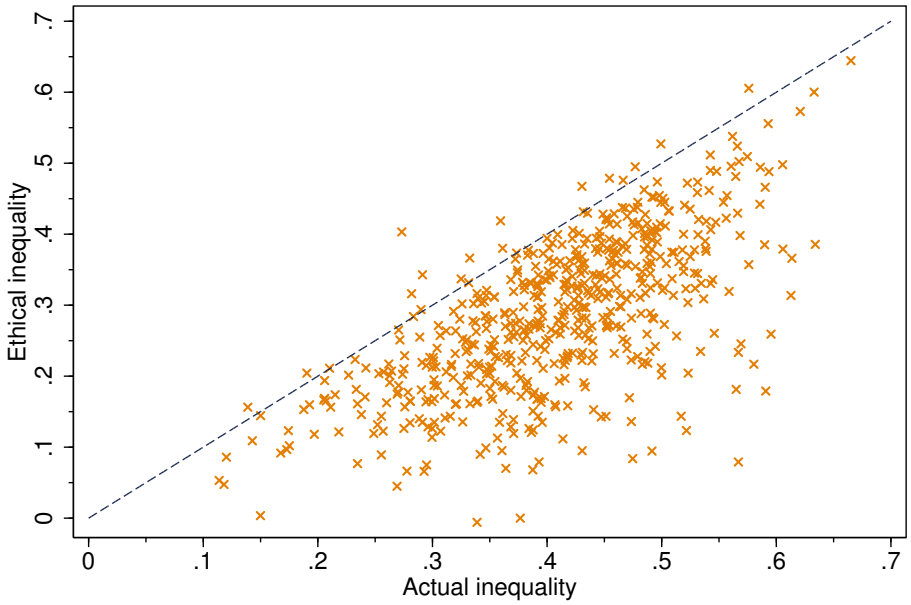
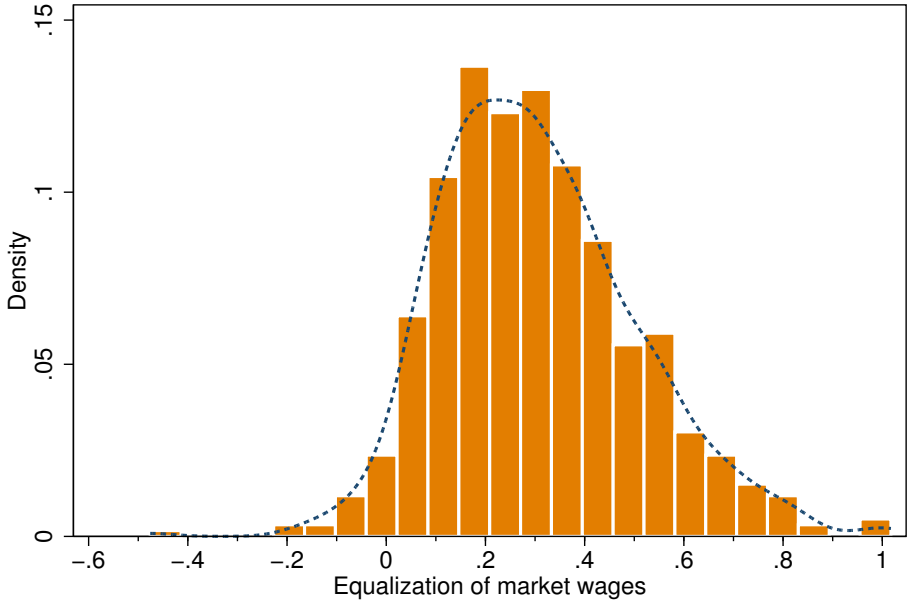


Figure 1: Individuals' subjective wage estimates for different occupations

Notes: The hollow triangles correspond to the sample average of individuals' actual wage estimates. Analogously, the hollow circles denote sample averages of ethical wage wage estimates for the different occupations. Occupations are ordered by average actual wage estimates. Net earnings corresponds to earnings before taxes and transfer payments, but after the deduction of social security contributions (1 CHF $\simeq$ 0.86 USD). See notes of table A.1 and appendix A for additional explanations.



(a) Ethical versus actual inequality of market wages



(b) The normative assessment of market (in)justice

Figure 2: Subjective inequality measures

Notes: Panel (a) shows the joint distribution of actual and ethical wage inequality. The dashed line corresponds to the 45° line. Panel (b) shows the distribution of individuals' assessment of market justice. The dashed line shows the corresponding kernel density estimate (Gaussian kernel; bandwidth of about 0.07). Variable definitions are given in the main text.

Appendix A. Variable Definitions

A.1. Dependent Variables

Occupational Wage Estimates: Individuals were asked two questions about occupational wages (the wording is taken from the original source questionnaire of the ISSP):

1. *"We would like to know what you think people in these jobs actually earn. Please write how much you think they actually earn each month (before taxes, but after social security contributions). Many people are not exactly sure about this, but your best guess will be close enough."*
2. *Next, what do you think people in these jobs ought to be paid. How much do you think they should earn each month (before taxes, but after social security contributions), regardless of what they actually earn."*

Individuals were asked to estimate actual and just wages of people working in the following ten jobs (in the same order as in the survey):

1. *"A skilled worker in a factory"* (skilled worker)
2. *"A doctor in general practice"* (doctor)
3. *"The chairman of a large national company"* (chairman)
4. *"A lawyer"* (lawyer)
5. *"A shop assistant in a big store"* (shop assistant)
6. *"The owner-manager of a large national factory"* (owner factory)
7. *"A judge at the Federal Supreme Court"* (judge)
8. *"An unskilled worker in a factory"* (unskilled worker)
9. *"A member of the Swiss Federal Council"* (minister)
10. *"Your own occupation"* (coworker)

The phrasing in parentheses denotes the label used in the main text, figures and tables. Descriptive statistics are given in table A.1.

Support for redistribution by the state: Individuals' support for redistribution by the state is measured by a simple item from the survey: *"Do you agree or disagree? It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes."* The possible answers range from 1 (*"strongly disagree"*) to 5 (*"strongly agree"*). In the analysis I use a dichotomized variable taking on the value 1 if an individual (strongly) agrees with the statement and 0 otherwise.

Stated party preference: Individuals were asked whether they feel affiliated with one of the political parties in Switzerland (i.e. people were asked for which party they would vote if there were any elections at the time of the interview). The five relevant parties at the time of the interview were the following:

1. The Liberal Party ("Freisinnig-Demokratische Partei", FDP); average score on a simple left-right scale (on a scale from 0 to 10 with 10 denoting the rightmost position; see below) of respondents in favor of this party is 5.91.

2. The Christian-democratic Party ("Christlichdemokratische Volkspartei", CVP); average score is 4.94 (which is almost equal to the overall average of 4.78 across all parties).

3. The Swiss People's Party ("Schweizerische Volkspartei", SVP); average score on left-right scale of 5.68.

4. The Social-democratic Party ("Sozialdemokratische Partei der Schweiz", SPS); average score on left-right scale of 3.58.

5. The Green Party ("Grüne Partei der Schweiz", GPS); average score on left-right scale of 2.94.

With respect to vote shares, these were the largest five parties in Switzerland in the year the survey was administered (1999). Members of the first four parties make up the Swiss Federal Council (the executive council at the national level). See Hug and Schulz (2007) for more information on the political parties in Switzerland.

A.2. Independent Variables

I use three sets of regressors in the empirical analysis: (i) variables describing the factors that should or ought to determine actual pay from the individuals' point of view, (ii) variables describing individuals' self-interest in redistribution, and (iii) additional control variables which potentially correlate with unobserved determinants of subjective inequality measures (like risk aversion, for example). Descriptive statistics are given in table A.2.

A.2.1. Factors that determine (or ought to determine) pay

Needs: This variable is meant to capture the extent to which an individual thinks that one's needs should be important in determining their income (need principle). This variable is constructed from the following two questions about the factors that should be important in determining one's pay: *"In deciding how much people ought to earn, how important should each of these things be, in your opinion? (i) What is needed to support your family. (ii) Whether the person has children to support."*

Effort: This variable is meant to capture the equity principle and is constructed from five questions about which factors should be important in determining pay: *"In deciding how much people ought to earn, how important should each of these things be, in your opinion? (i) How much responsibility goes with the job. (ii) The number of years spent in education and training. (iii) Whether the job requires supervising others. (iv) How well he or she does the job. (v) How hard he or she works at the job."*

Ascribed skills: This variable measures the extent to which a person beliefs in ascribed factors as being important in determining the amount of compensation. This question relates to the perception of individuals of which factors actually are important for getting ahead. *"We have some questions about opportunities for getting ahead: (i) How important is coming from a wealthy family? (ii) Knowing the right people?"*

Acquired skills: This variable measures if an individual thinks that acquired skills are actually important in determining one's pay. The variable is the sum of over two different questions: *"We have some questions about opportunities for getting ahead: (i) Do you agree or disagree? In Switzerland, people get rewarded for their effort. (ii) In Switzerland, people get rewarded for their intelligence and skills."*

A.2.2. Self-interest in Redistribution

Income: An individual's personal net monthly income (i.e. income before transfers and taxes, but net of mandatory social security contrubutions).

Income dissatisfaction: This variable corresponds to the ratio of just to actual wage estimate for individual i's coworkers, that is $(y(i)^{\text{ethical}}_{\text{coworker}}/y(i)^{\text{actual}}_{\text{coworker}})$, with $y(i)^{\text{actual}}_{\text{coworker}}$ and $y(i)^{\text{ethical}}_{\text{coworker}}$ denoting individual i's actual and ethical wage estimate for his or her coworkers, respectively.

Mobility: The only information about individuals' mobility is contained in two questions about their self-perception of the position today and the position ten years ago: *"(i) In our society, there are groups which tend to be towards the top and groups which tend to be toward the bottom. Below is a scale that runs from top to bottom. Where would you put yourself on this scale? (ii) And ten years ago, where did you fit then?"* Both are measured on a scale from 1 (bottom) to 10 (top). The mobility scale used simply is defined as the difference between the two scores (i.e. position today minus position ten years ago).

A.2.3. Additional Control Variables

Occupational prestige: This variable measures occupational prestige according to the Standard International Occupational Prestige Scale (SIOPS), based on the International Standard Classification of Occupations.

Perception of Conflicts: This variable measures individuals' perceptions of conflicts within society. Included items are questions about the existence of conflicts between: *"In all countries, there are differences or even conflicts between different social groups. In your opinion, In Switzerland how much conflict is there between...: (i) Poor people and rich people? (ii) The working class and the middle class? (iii) Management and workers? (iv) People at the top of society and people at the bottom? (v) Young people and older people?"*

Political scale: This variable measures individuals' self-rated position on a scale that takes on an integer value $j \in \{0, \ldots, 10\}$, with 0 (10) indicating the leftmost (rightmost) position.

Socio-demographic controls: The remaining controls that are used in the analysis are self-explanatory: Age (in years), education (highest attained education, in years), gender, citizenship (dummy variable indicating Swiss citizenship), location of residence (dummy indicating residence in the German-speaking part of Switzerland, dummy indicating residence in an urban area), and employment status (dummy variables indicating employment, unemployment and nonemployment, respectively).

Table A.1: Individuals' subjective wage estimates, by occupation

	Actual wage	Ethical wage
(a) Bottom group:		
Shop assistant	3,000.51	3,976.14
	(576.65)	(750.47)
Unskilled worker	3,115.14	3,862.42
	(606.94)	(710.16)
Skilled worker	4,230.29	4,988.27
	(840.81)	(942.53)
(b) Top group:		
Doctor	16,544.88	13,041.23
	(9,372.36)	(7,310.21)
Lawyer	18,066.27	12,825.34
	(10,713.63)	(7,632.34)
Federal judge	19,458.89	15,387.11
	(9,037.83)	(8,243.59)
Member of the Swiss Federal Council	23,487.06	18,404.38
	(13,339.75)	(10,802.50)
Chairman	24,830.39	16,391.90
	(17,073.77)	(11,449.99)
Owner of a factory	32,556.93	24,231.55
	(21,118.52)	(16,908.66)
(c) Respondent's occupation		
Coworker	6,306.41	6,770.15
	(5,680.46)	(5,140.40)

Notes: The table shows average estimates of actual and just net monthly wages in CHF (i.e. wages net of mandatory social security contributions, but before taxes and transfers; 1 CHF $\simeq$ 0.86 USD)). Sample standard deviations are given in parentheses. The number of observations varies somewhat between different cells because not all individuals gave estimates for all occupations. The maximum number of observations is 593, which corresponds to the sample used in the main part of the empirical analysis.

Table A.2: Summary statistics, control variables

	Mean	Standard deviation
(a) Beliefs and perceptions		
Should be important: needs	3.247	(1.011)
Should be important: effort	3.817	(0.450)
Is important: ascribed skills	3.026	(0.758)
Is important: acquired skills	3.311	(0.609)
(b) Self-interested motives		
ln(income)	8.336	(0.663)
Mobility	0.543	(1.620)
Wage dissatisfaction	1.130	(0.304)
(c) Additional control variables		
Occupational prestige	46.626	(12.335)
Employed (yes = 1)	0.841	(0.366)
Unemployed (yes = 1)	0.022	(0.147)
Nonemployed (yes = 1)	0.137	(0.344)
Age (years)	43.411	(13.532)
Female (yes = 1)	0.413	(0.493)
Education (years)	13.413	(2.638)
Urban residence (yes = 1)	0.653	(0.477)
Living in German-speaking part (yes = 1)	0.728	(0.445)
Foreign citizenship (yes = 1)	0.148	(0.356)
Political self-assessement (0 = left, 10 = right)	4.789	(1.686)
Perception of conflicts	2.337	(0.482)
Numer of observations	593	

Appendix B. The Gini Coefficient with $k = 2$

Assume that we observe group-level data on wages:

$$\{(y_1, f_1), \ldots, (y_j, f_j), \ldots, (y_k, f_k)\}, \tag{B.1}$$

with $j = 1, \ldots, k$ indexing groups of wage earners (ordered by their within-group average wage). For example, as in the main text, j may index occupations.

Further, let f_j denote the population weight of group j and let y_j denote the average wage of group j. For any such grouped data, the Gini coefficient G can be computed as follows:[30]

$$G = \left(\left[\sum_{j=1}^{k} 0.5 \cdot (F_{j-1} + F_j) q_j \right] - 0.5 \right) / 0.5 = \left[\sum_{j=1}^{k} (F_{j-1} + F_j) q_j \right] - 1, \tag{B.2}$$

F_j denotes to the accumulated population share up to and including group j and q_j represents the wage share of group j. That is, $q_j = (f_j \cdot y_j) / \sum_{j=1}^{k} (f_j \cdot y_j)$.

In the case of two distinct groups only the wage distribution can be fully described by the following three moments:

$$\{(y_1, f_1), (y_2, f_2)\} = \{(y_1, f_1), (y_2, (1 - f_1))\}, \tag{B.3}$$

because $f_1 + f_2 = 1$. In this case, the computation of G therefore simplifies considerably. Multiplying out equation (B.2) and using the notation that $j = 1 = \text{bottom}$ and $j = 2 = \text{top}$ yields:

$$\begin{aligned} G &= [(0 + F_{\text{bottom}}) q_{\text{bottom}} + (F_{\text{bottom}} + F_{\text{top}}) q_{\text{top}}] - 1 \\ &= [(0 + f_{\text{bottom}}) q_{\text{bottom}} + (f_{\text{bottom}} + 1) q_{\text{top}}] - 1 \\ &= f_{\text{bottom}} (q_{\text{bottom}} + q_{\text{top}}) + q_{\text{top}} - 1 \\ &= f_{\text{bottom}} - q_{\text{bottom}} \end{aligned} \tag{B.4}$$

The first equality of equation (B.4) follows from the fact that $F_0 = 0$, $F_1 = F_{\text{bottom}} = f_{\text{bottom}}$ (because F is a cumulative density function) and that $F_2 = F_{\text{top}} = f_{\text{bottom}} + f_{\text{top}} = 1$ (because there are two groups of wage earners only). The last equality follows from the fact that $(q_{\text{bottom}} + q_{\text{top}}) = 1$ and that therefore $(q_{\text{top}} - 1) = -q_{\text{bottom}}$.

[30] This formula in turn reflects the geometric interpretation of the Gini coefficient: the Gini coefficient equals the ratio of the area between the curve representing equal distribution of wages and the Lorenz curve to the area under the curve representing equal distribution (which is equal to 0.5 by construction). In the case of grouped data, the area above the Lorenz curve can be computed as the sum of trapezoids:

$$\sum_{j=1}^{k} 0.5 \cdot (F_{j-1} + F_j) q_j$$

Subtracting 0.5 (which equals the area above the diagonal) and dividing by 0.5 (which equals the area below the diagonal) therefore yields the formula for the Gini coefficient as given by equation (B.2).

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